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Supplement II

PUBLICATIONS AND PATENTS WITH ABSTRACTS

ENZYME RESEARCH DIVISION
Bureau of Agricultural and Industrial Chemistry
Agricultural Research Administration
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Western Regional Research Laboratory,
Albany, California

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A limited number of reprints of publications are available. Those not available are marked with an asterick (*).

Journal Articles:

E. F. Jansen, M.-D. F. Nutting and A. K. Balls. The reversible inhibition of acetylesterase by diisopropyl fluorophosphate and tetraethyl pyrophosphate. Jour. Biol. Chem. 175:975-987. September, 1948.
It has previously been shown by others that the toxic activities of the war gas, diisopropyl fluorophosphate (DFP) and the insecticidal mixture "hexaethyl tetraphosphate" (HETP) in the animal body are due to their specific irreversible inhibition of cholinesterase. The active constituent of HETP was found to be tetraethyl pyrophosphate (TEP). Of the plant enzymes urease, beta-amylase, pectinesterase, papain and acetylesterase, only the latter was found to be irreversibly inhibited in vitro, to any extent, by incubation with minute amounts of DFP. TEP inhibited acetylesterase even in lower concentrations than were needed with DFP, however this inhibition was slowly reversible and could be accelerated with certain citrus enzyme concentrates. The necessary conditions and the kinetics of the reaction of DFP and TEP on acetylesterase were studied. In situ inhibition of citrus acetylesterase by DFP was accomplished and it was found that there existed a factor in citrus which could reverse even the DFP inhibition. In view of these investigations, the profound toxic effect of these substances seems to be of a more transitory nature in (citrus) plants than in animal tissue.

B. Axelrod. A study of the mechanism of "phosphotransferase" activity by use of radioactive phosphorus. Jour. Biol. Chem. 176:295-298. October, 1948.
It has been demonstrated by the use of P^{32} labelled nitrophenyl phosphate, and also by the use of radioactive inorganic phosphate that in the "phosphotransferase" catalyzed transfer of phosphate from nitrophenyl phosphate to methanol the transported phosphate does not pass through the inorganic stage.

S. Schwimmer and A. K. Balls. Crystalline alpha-amylase from barley malt. Jour. Biol. Chem. 176:465-466. October, 1948. Alpha-amylase is active in germinating seeds, and constitutes the strategic component of malt, as used in industry. Directions are given for separating the enzyme in the form of pure crystals from extracts of malt. Some properties of the pure enzyme have already been determined. It is a protein containing 13.4 percent nitrogen, and apparently contains a significant amount of calcium.

E. F. Jansen. The isolation and identification of 2,2'-dithiolisobutyric acid from asparagus. Jour. Biol. Chem. 176:657-664. November, 1948. 2,2'-Dithiolisobutyric acid has been isolated from asparagus. The structure of this substance was proven by certain degradative reactions and by the synthesis of a derivative.

S. Schwimmer. On the amylases of barley malt. VII Congres International des Industries Argicoles, Vol. 1, Q 6 - D. Paris, 1948. The widespread use of the amylases of barley malt in the brewing, distilling, milling, baking, textile, paper and other industries makes it the most important source of enzymes for industrial purposes. Yet the agents required for this extensive utilization do not constitute more than 0.1 percent of the dry weight of the barley kernel. The powerful ability of this very small fraction of the grain to convert starches to dextrins and sugars must be still further divided into two enzyme: alpha- and beta-amylase. All the work done on these amylases cannot be reviewed here. Attention will be called to the present status of knowledge concerning their development of the amylases in ripening and germinating grains, their properties, action and purification; their action in industrial saccharification.

PATENTS

*W. G. Rose. Esters of diacyl-glycerophosphates. U. S. Patent 2,447,715. August 24, 1948. Patent describes method of preparing aminoethyl esters of diacyl-glycerophosphoric acids by a process involving reaction of a diacyl-glycerophosphoryl chloride with hydroxyethyl phthalimide. The products are useful as emulsifying, water-binding, and dispersing agents.

*I. W. Tucker and A. K. Balls. Process of extracting diastase. U. S. Patent 2,457,754. December 28, 1948. The enzyme, diastase, is isolated from wheat products by extraction with aqueous sulphite solutions. The diastase is useful in fermentation processes, for example to produce alcohol from cereal grains.